SUMMARY
OF THE
IMPROVEMENTS AND DISCOVERIES
IN THE
MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *Cases proving the Influence of the Cerebro-Spinal Axis in the production of Animal Heat.* By M. Brugnoli.—As pathological facts are, generally speaking, superior to experiments on living animals, in so far as the modifying powers of the nervous system over the various functions of the body are concerned, the following four cases bearing on the influence of the cerebro-spinal axis on the production of animal heat, will be read with interest.

1. A woman, 45 years of age, after having long suffered from severe pain in the head accompanied with vertigo, entered the hospital in the following state. Her look was expressive of pain, and she supported the head with both her hands in its every movement. She complained of severe and fixed pain in the occipital region. The respiration and circulation were natural. Her extremities were cold, the upper more so than the lower, and this coldness continued to increase without being relieved by any remedy. Deglutition became difficult after a while, and she died after a period of two months. A rounded cyst, about an inch in diameter, and full of whitish-green purulent matter, occupied the posterior part of the right lobe of the cerebellum, but made no visible projection on the surface.

2. A woman 75 years of age, entered the hospital for a trifling affection of the digestive organs, where she was soon seized with new symptoms in the form of a stupor, difficulty of speech, and violent pain in the head. All the limbs retained their mobility, but the upper extremities and the upper half of the trunk of the body became as cold as marble. The respiration and circulation did not, however, appear to suffer materially. Every remedy failed to restore the heat, and she died after five days of suffering. The left hemisphere of the cerebellum contained an apoplectic effusion of the size of a large walnut.

3. A soldier came into the hospital on account of a fixed severe pain in the dorsal region accompanied by feverish symptoms. When there, he had an attack of pneumonia, from which he made a slow and bad recovery. Towards the end of winter a new sensation began to be complained of; this was a sensation of coldness, which he could not remove either by additional clothing or any remedy. This sensation of coldness progressively increased, but did not seem to affect the respiration or circulation. No symptom of paralysis was observed, and his intellectual faculties seemed to be perfect to the day of his death, which took place eleven months after his entering the hospital. The eighth, ninth, and tenth dorsal vertebræ were carious, and an abscess lay over their anterior surface. The spinal marrow, for an extent of about two inches opposite these vertebræ, was in a state atrophy.

4. A vigorous and robust porter, 30 years of age, was seized, after lifting a heavy burden, with general uneasiness and a sensation of intense cold, which devleoped itself over all the surface of the body, especially when the surface

was touched, though the heat was actually greater than natural. The movements of the body, and the pronunciation of words, were executed with great slowness. The pulse was strong, severe pain was complained of in the head, and his anxiety was great. He died on the fourth day. Coagulated blood was found extravasated beneath the theca of the spinal marrow from the origin of the first dorsal nerves to the extremity of the spinal marrow. The vessels of the substance of the spinal marrow itself were also strongly injected.

M. Brugnoli thinks the above cases demonstrative of the influence of the cerebro-spinal axis on the development of animal heat. One or two foreign periodicals, which also notice these cases, agree with M. Brugnoli that the cases seem to lead to that conclusion.—*Edin. Med. and Surg. Jour.* July 1842, from *Bulletino delle Sci. Mediche*, Oct. 1841.

2. *Influence of the Nerves on Muscular Irritability.*—M. Longet found that when a nerve of voluntary motion was cut across, on the fourth day thereafter, the muscles to which it was distributed could not be excited to contract by irritating the nerve by means of a weak galvanic current. The muscles, however, supplied by this nerve contract immediately on the application of the slightest stimulus to themselves, even at the end of fifteen days. Even after the lapse of a month, direct stimulation causes them to contract slightly, and may be recognized at the end of seven weeks; no irritation of the nervous twigs, however, excites the slightest motion after the fourth day. From the seventh week, the muscular fibre, already much blanched, seems to undergo a complete degeneration, and soon ceases to contract in the slightest, even with the most powerful stimulants. It is only then in consequence of a lesion of its nutrition that muscular fibre, in losing its organic characters, loses also its essential characteristic, irritability, which, however, as has been seen, remains a long time after all nervous influence has been suppressed.—*Ibid.* from *Comptes Rendus*, July, 1841.

3. *Influence of the Pneumogastric Nerve on the Movements of the Stomach.*—M. Longet having opened many dogs, ascertained that, in the greater number of them, irritation of the pneumogastric nerves produced contraction of the stomach. Frequently, during his experiments, he saw the stomach assume the hour-glass form. In a few dogs, the movements of the stomach, on the irritation of the nerve, were scarcely apparent. After repeating his experiments on forty dogs, M. Longet recognized that the difference in the results obtained depended on the condition of the stomach itself. Thus, if the animal was opened when the stomach was full, irritation of the pneumogastric nerves produced the most marked movements of the stomach; but, when empty, scarcely any movement was excited; in fact, the movements were feeble, just in proportion to the time which elapsed from the period of chymification, or filling of the stomach. He thought these observations explained the very different results which experimentalists have arrived at regarding the influence of these nerves over the movements of the stomach; as, if they experimented when the stomach was in different states, they might logically arrive at opposite conclusions from the same kind of experiment. He was never able to excite any movement of the coats of the stomach by irritating or galvanizing the filaments of the great sympathetic, or the semilunar ganglia.—*Ibid.* from *Ibid.* Feb. 1842.

4. *On the Blood-Globules, their Formation and their Use.*—M. Donne recognizes three kinds of particles in the blood,—red globules, or blood-globules, properly so called, white globules, and globulines of chyle, as he calls them. The red globules are flat in all kinds of blood; circular in the mammalia; elliptical in fishes, reptiles, and birds. The elliptical globules alone have a solid substance in their interior; no similar appearance has he been able to detect in the circular globules. Water, he says, renders the flat blood-globules spherical; and acetic acid dissolves completely the round globules of the mammalia, but leaves an insoluble portion in the elliptical globules of birds, reptiles, and fishes. This insoluble portion, he

says, is the central nucleus. He therefore regards the blood-globule as composed of a flattened vesicle containing a solid nucleus in the elliptical globules, and a fluid only in the circular ones. The elliptical blood-globule of the camel he found no exception to the general rule that those of the mammalia have no central nucleus.

The white globules he describes as colourless, irregular in their contour, and having a granular aspect, and exist in the blood of all animals. Water breaks them up, and he imagines them to be composed of a cyst containing three or four solid granules.

The globulines again he describes as extremely small granules similar to those of the chyle.

M. Donné gives the following theory of the mode of formation and uses of these different parts. The globulines are the product of the chyle, which is continually being added to the blood. Three or four of these unite together, and whilst circulating the blood, receive an albuminous envelope. They thus form the white globules. The white globules once formed change little by little their forms; become flattened, coloured; the granular matter in their interior becomes homogeneous or dissolved, and they are thus transformed into the red or proper blood-globules. The blood-globules themselves have only a passing existence; they dissolve after a certain time, and constitute the so-called *liquor sanguinis*. He says that certain substances, as milk, are capable of being immediately transformed into blood-globules by being ejected into the blood-vessels; and he regards the spleen as the organ more especially charged with the important function of the manufacture of blood-globules. He adds, that a minute examination of the vascular tissues shows, that at no point do the blood-globules leave their vessels to assist in the formation of the organs of the body, or to unite with other organic elements. Hence, he infers, it must be the fluid part of the blood which transudes through the vascular walls, and that this part must be the fluid essentially concerned in the process of organization.—*Ibid.* from *Ibid.*, 7th March, 1842.

5. *On the Effects of an impermeable Covering applied to the Skin.*—MM. Becquerel and Breschet read a paper before the Academy of Sciences, on the temperature of the organic tissues of animals, and especially of rabbits, the hair of which had been shaved off and the skin covered with an impermeable coating of strong glue, of suet, and of resin. It was found that the animals died very shortly after being covered with such a coating, and these experimenters thought it was by a process of asphyxia, in consequence of the transpiration from the skin being prevented. It would appear that they expected, from the natural transpiration being prevented by the impermeable coating, that the temperature of the animal would increase, and that a violent fever would be produced, under which the animal would expire. But the very opposite happened. Thus, the temperature of the first rabbit, before it was shaved and covered with the impermeable coating, was 38° Cent., but immediately after the coating was dried it was found that the muscles of the thigh and of the breast had fallen in temperature to 32° Cent. An hour afterwards, the temperature had fallen to 24.°5 Cent. In another rabbit, the coating on which was put on with more care, as soon as the coating was dried, its temperature was found to have fallen so much as to be only 3° above that of the surrounding atmosphere, which was on that day 17° Cent. One hour after this the animal died.

These experimentalists afterwards made some experiments in order to ascertain the relative difference of heat between venous and arterial blood. They introduced delicate thermometers for this purpose into the auricles of the heart of dogs, and invariably found that the arterial blood was a few fractions of a degree higher than that of the venous blood.—*Ibid.* from *Ibid.*, Oct. 1841.

6. *On the Coloration of the Bones by Madder.*—MM. Serres and Doyere have been engaged for upwards of two years in a long course of experiments on the coloration of the bones of living animals by feeding them with madder, and

have at length arrived at some very curious and interesting results both with regard to that subject and the mode in which bone is formed. They found that when an animal was fed for a long time on madder, not only were the bones coloured of a rose hue, but all the other solids and fluids of the body, with the exception of the tendons and cartilages and the white substance of the brain. In the bones alone they found this colour to be permanently fixed, and not removable by maceration, nor by certain chemical solvents of the colouring matter of madder. Maceration, however, removed the colouring matter from all the other tissues. They ascertained, from a chemical investigation, that it was the phosphate of lime which held permanent the colouring matter of madder in the bones. They found that the colouring matter did not penetrate the bones to any depth, but the distribution of the colour was remarkable as throwing much light on the true structure of the osseous tissue.

When a long bone coloured with madder is sawed transversely, the coloured portion is observed to penetrate but a little depth, forming, as it were, a circle round the bone. When this section is examined by means of a magnifying power of twenty diameters or so, the colouring matter is seen to exist as red points scattered over a white ground. When a power of two or three hundred diameters is used, each point is seen to to be in reality a coloured circle surrounding a round aperture in the substance of the bone. A longitudinal section of the same bone exhibits the true structure of the bone more particularly: and proves that this rounded aperture seen surrounded by a coloured ring in the transverse section, was the section of a minute canal, or capillary vessel, which is more delicate as the animal is older. The coloured ring surrounding it was seen to be the walls of this canal, or that part of the bony structure which constituted its walls, and which differed in no respect from the uncoloured portion of the bony tissue which surrounded it.

The most exterior layer of colouring matter seen on the outer surface of the bone was found to consist of a coloured layer, as thin as that which was seen surrounding each bony capillary vessel in the interior of the bone. The bone then was seen only to be coloured at those portions which were in immediate contact with the capillary vessels of its tissues or of the periosteum, and at no other part.

MM. Serres and Doyère next pass to the examination of what it has been the custom of late to describe as the osseous corpuscles, and they show, by the simplest of all experiments, viz. by allowing a drop of oil to come in contact with a slice of bone under the microscope, that these so-called osseous corpuscles, on which so much stress has been laid, are neither more nor less than microscopic deceptions,—are, in fact, cavities or empty cells, which they think are possibly filled with a fluid during life, but not with the circulating fluid, as they are never coloured with madder.

These experimentalists ascertained another important fact. They fed a young pigeon with madder from the 10th March to the 15th of April 1840, when they amputated the wing, and found the bones deeply stained with the colouring matter. The madder was then stopped; it was nourished on the ordinary food of these animals; and on the 30th of January 1841, the other wing was cut off, from the effects of which operation it died. Though this was a young animal, only four months old when it lost its first wing, and though the bones had been exposed to the incessant vital actions for so many months after the madder was stopped, its bones, when it died, presented the very same depth of colour as the wing which had been amputated so many months before. MM. Serres and Doyère, therefore, justly infer, that the asserted incessant change or renewal of the molecules is not an essential condition of the living tissues, unless bones are henceforth to be ranged amongst the dead ones.

From these investigations, then, it appears that the staining in the bones by madder is purely a chemical process,—a species of dyeing. That in the coloured ring which the naked eye discovers on the long bones, the colouring matter is confined to that portion of the osseous tissue in contact with the periosteum, and that forming the immediate walls of the capillary vessels of the bone.

That, as the distance of each capillary vessel from each other is more than double the breadth of the coloured layer surrounding each, even in the coloured ring the greater portion of the bone is really uncoloured, really white. And, lastly, that the dyeing of the bone is influenced by the mode in which the blood is distributed through it; some bones, from the peculiarities of their circulation, being coloured from within outwards, otherwise from without inwards.—*Ibid.* from *Ibid.*, Feb. 1842.

7. *Physiological Observations on Double Uterus.*—M. **Dumas** relates in the *Journal de la Soc. de Méd. Pratique de Montpelier*, a case of double uterus observed by himself, and refers to a number of similar cases, from a comparison of which he draws the following conclusions.

1st. The menstrual discharge may continue from the empty uterus, whilst the other contains an embryo.

2. The two uteri do not influence each other to such a degree, as that the empty one should be always under the immediate influence of the other which is fecundated.

3. The woman may be a virgin as regards the left one, and with child in the right, and *vice versa.* She may be at the full time with the one, and in labour, while with the other she is not near her period.

4. Superfetation may take place in cases of double uterus with double neck and os uteri, and also in cases of double uterus with single neck and os uteri.

5th. Notwithstanding the absence of anatomical proof of the existence of superfetation in cases of double uterus, its possibility ought to be admitted in legal medicine.

6th. In well marked cases of double uterus, there will be an inclination to the same side that the fertile womb is on; and all the symptoms will be slightly different from those observed in a case of single uterus.

7th. Although it cannot be laid down as a principle, that each cavity of the double uterus can become so developed, as to be able to contain a fœtus at the full period, yet we can believe in frequent abortions.

8th. The double uterus, when enlarged, renders labour and the expulsion of the after-birth difficult, and facilitates the laceration of the soft parts.

9th. Thanks to the form observed by M. Martin St. Ange, (in which the cavity of the neck of the uterus communicated with that of the body, by a narrow canal thirteen millimetres in length,) we can explain the retention of the secundines, and the difficulty experienced in their extraction, when the canal which retains them has not previously been sufficiently dilated.—*Gazette Méd. de Paris*, 4 Feb. 1842.

8. *Transposition of the Viscera.*—M. **Gerdy** communicated to the French Academy of Medicine 22d Feb., a case of transposition of all the organs; even the cavities of the heart were transposed.

MATERIA MEDICA AND PHARMACY.

9. *Emmenagogue Solution.*—M. **Bouchardat** recommends the following as an emmenagogue:—Chloro-aurati ammoniæ, ten grains; distilled water, 300 scruples; alcohol, 36°, 300 scruples. Make a solution, and preserve in a well-stoppered vessel. This preparation is used with much advantage in cases of amenorrhœa and dysmenorrhœa, arising from debility, and is far superior to other preparations of gold, such as, for instance, the cyanuret of that metal. It is given morning and evening in the dose of a coffee-spoonful in a cupful of pure water, duly sweetened. The chloro-aurate of ammonia is obtained by dissolving one part by weight of the perchloruret of gold with two parts by weight of the hydro-chlorate of ammonia, in a sufficient quantity of distilled water, aiding the solution by the addition of a few drops of weak nitro-muriatic acid (aqua